# DC-N2

## Diagnostic Ultrasound System

## Datasheet

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# 1 System Overview

## 1.1 Application

- Abdomen
- Obstetrics
- Gynecology
- Small parts
- Vascular
- Urology
- Musculoskeletal
- Orthopedics
- Emergency Medicine
- Nerve
- Cardiology
- Pediatrics
- Others

## 1.2 Transducer types

- Curved array
- Linear array

## 1.3 Imaging modes

- B-Mode
- Tissue Harmonic and PSH (Phase Shift Harmonic Imaging)
- M-Mode
- Color Doppler Imaging
- Power Doppler Imaging/Directional PDI
- Pulsed Wave Doppler
- Smart 3D
- iScape™ View (Panoramic Imaging)

## 1.4 Standard features

- B-Mode
- THI and PSH
- M-Mode
- Color Doppler Imaging
- Power Doppler Imaging and Directional PDI
- Pulsed Wave Doppler
- HPRF (High Pulse Repeat Frequency)
- iClear™ (Speckle Suppression Imaging)
- iBeam™ (Spatial Compounding Imaging)
- iTouch™ (Auto Optimization)
- Zoom/iZoom™ (Full Screen Zoom)
- FCI (Frequency Compounding Imaging)
- B steer
- ExFOV Imaging
- iStation™
- iVision™
- Integrated 320G hard drive
- 2 active transducer connectors
- DVD-RW Driver
- 3 USB ports
- Shared Service Application Package (Abdominal, Obstetrical, Gynecological, Cardiac, Small Parts, Urological, Vascular, Pediatric Packages)
- Auto Doppler Calculation
- iStorage (Direct Network Storage)
- Tutorial function: iScanHelper

## 1.5 Optional features

- Height adjustable control panel
- 3rd transducer connector
- iScape™ View
- IMT (Auto Intima-Media Thickness Evaluation)
- Smart 3D
- Built-in Battery
- Footswitch
  - 971-SWNOM (2-pedal)
  - 971-SWNOM (3-pedal)
  - FS-81-SP-2 (1-pedal)
- Nerve Application Package
- Emergency Medicine Application Package
- DICOM Basic (including DICOM Task Management, Print, Storage, Storage Commitment, Media Exchange)
- DICOM Worklist
- DICOM MPPS (Modality Performed Procedure Step)
- DICOM OB/GYN structured report
- DICOM Vascular structured report
- DICOM Cardiac structured report
- DICOM Query/Retrieve

## 1.6 Language support

- Software display: English, Chinese, German, Spanish, French, Italian, Portuguese, Russian, Czech, Polish, Turkish
- Keyboard input: English, Chinese, German, Spanish, French, Italian, Portuguese, Russian, Czech, Polish



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Icelandic, Norwegian, Swedish, Finnish, Turkish, Danish
- Control panel overlay: Chinese, Italian, Portuguese, Spanish, German, Russian, French, Czech, Polish
- User manual: English, Chinese, Russian, Spanish, Portuguese, Turkish, French, German, Italian

## 2 Physical Specification

### 2.1 Dimension and weight
- Width: 520mm
- Height:
  - 1265~1415mm (with adjustable height)
  - 1315mm (without adjustable height)
- Depth: 670mm
- Weight: approx. 55kg (with battery)

### 2.2 Monitor
- 15-inch high resolution color LCD monitor
- Resolution: 1024×768
- Brightness adjustable
- Screen saver
- Monitor: tilt of 20°up, 90°down, and swivel of 90° right, 90° left

### 2.3 Transducer Connector
- Maximum 3 transducer connectors

### 2.4 Electrical power
- AC adapter Input:
  - Voltage:100-240V~
  - Frequency: 50/60Hz
  - Power consumption: 420VA
- Built-in Battery: Lithium-ion Battery 14.8V, 6600mAh

### 2.5 Operating Environment
- Ambient temperature: 0-40 °C
- Relative humidity: 30%-85% (no condensation)
- Atmospheric pressure: 700hPa-1060hPa

### 2.6 Storage & Transportation Environment
- Ambient temperature: -20~55 °C
- Relative humidity: 20%-95% (no condensation)
- Atmospheric pressure: 700hPa-1060hPa

## 3 User Interface

### 3.1 Control panel
- Power/Battery indicator
- Alphanumeric keys
- Function keys
- Knobs
- Backlit keys, ensuring accurate work in the dark room
- 8-segment TGC control
- Programmable keys, available for user-defined functions
- Trackball, sensitivity adjustment
- Key brightness adjustment
- Independent up/down of control panel
  - Down/Up: 1265~1415mm (150mm range)

### 3.2 System boot-up
- Boot-up in about 30 sec
- Shut down in about 20sec
- Boot-up from standby mode in about 15 sec
- Shut down from standby mode in about 6 sec

### 3.3 Comments
- Support text input and arrow
- Adjustable text size, arrow size and direction
- Support home position
- Covers various application
- User customizable

### 3.4 Bodymark
- More than 140 bodymarks for versatile application
- User customizable

### 3.5 Screen information*
- Common info:
  - Mindray logo
  - Hospital name
  - Exam date
  - Exam time
  - Acoustic power
  - Mechanical index
  - Tissue thermal index
  - ID, Last name, First Name, Middle initial, Gender, Age

- Probe model
- Operator
- TGC Curve
- Focus position
- Thumbnail
- Imaging parameters
- iScanHelper guidance

*Not all items are listed in this part, detail info please refer to user manual

# 4 Imaging Parameters

## 4.1 Overview

- Echo-enriched Beamformer
- Up to768 channels
- 4-beam forming

## 4.2 B-mode

- Display formats: Single(B), Dual(B+B), Quad(4B)
- iClear™: Off; On, 1-4 steps
- iBeam™: Off/On
- iTouch™: Auto optimization (TGC, Gain)
- Frequency (depend on probe)
- B steer: available on linear transducers
- ExFOV: extended FOV available on convex, linear transducers
- Depth: 0.9-37cm (depend on transducer )
- Frame rate (max): 400f/s
- Acoustic output power: 7%-100%
- TGC: 8 pods on control panel
- Dynamic range: 30-220, 5/step
- Gain: 0-100, 1-2/step
- Focus number: 1-4, adjustable
- Focus position: Max. 16, adjustable
- FOV (Field of View): continuously adjustable
- Line density: L/M/H/UH
- Persistence: 0-7, 8 steps
- Horizontal Scale: on/off
- L/R flip: Left/Right
- U/D flip: Up/Down
- TSI (Tissue Specific Imaging): general/muscle/fluid/fat
- Gray Map: 8 types
- Tint map: off; 16 types
- Gray Invert
- Auto merge
- Lithotrity

## 4.3 THI and PSH

- Available on all types of transducers
- Patent PSH technology, obtains purer harmonic, better contrast resolution
- iClear™ available

## 4.4 M-mode

- Display formats: V1:2, V2:1, V1:1, Full (V: vertical)
- Acoustic output power: 7%-100%
- Dynamic range: 30-220, 5/step
- Gain: 0-100, 1-2/step
- Speed: 1-6, 6 steps
- M soften: 0-14, 1/step
- Tint map: off; 16 types
- Gray Map: 8 types
- Edge enhance: 0-14, 1/step

## 4.5 Color Doppler Imaging

- Dual live
- iTouch™: Auto optimization (Gain)
- Frequency (depend on probe)
- Max. velocity: 241cm/s
- Steer: 6° (linear transducer)
- Max. frame rate: 233f/s
- Acoustic output power: 7%-100%
- Gain: 0-100, 2/step
- ROI size/position: adjustable
- Scale: 30 steps (depend on exam mode)
- Baseline: -8~+8, 17 steps
- Wall filter: 0-7, 8 steps
- PRF: max. 15.7kHz, min. 0.1kHz
- Packet size: 0-3, 4 steps
- Smooth: 0-4, 5 steps
- B/C Align: on/off
- Priority: 0%-100%, 10%/step
- Map: V0-V10, VV0-VV9, 21 types
- Invert: on/off
- Persistence: 0-4, 5 steps
- Line density: L/M/H/UH, 4 steps

## 4.6 Power Doppler Imaging

- Dual live
- Support directional PDI
- Frequency (depend on probe)
- Acoustic output power: 7%-100%
- Dynamic range: 10-70, 5/step



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- Gain: 0-100, 2/step
- ROI size/position: adjustable
- Steer: 6° (linear transducers)
- Scale: 30 steps (depend on exam mode)
- Wall filter: 0-7, 8 steps
- PRF: Max. 15.7kHz, min. 0.1kHz
- Packet size: 0-3, 4 steps
- Smooth: 0-4, 5 steps
- B/C Align: on/off
- Priority: 0%-100%, 10%/step
- Map: P0-P3, dP0-dP3, 8 types
- Persistence: 0-4, 5 steps
- Line density: L/M/H/UH, 4 steps

4.7 PW Mode

- Display formats: V1:2, V2:1, V1:1, Full (V: vertical)
- iTouch™: Auto optimization (Baseline, PRF)
- Frequency (depend on probe)
- Acoustic power
- PW velocity: max. 739cm/s
- Sample volume size: 0.5-20mm (PW only), 0.5-5mm/step
- Sample gate depth: adjustable
- Scale: 30 steps
- Baseline: -4~4, 9 steps
- PW Steer: 6° (linear transducer)
- Audio: 0%-100%, 2%/step
- PW PRF: max. 24kHz, min. 0.7kHz
- Gain: 0-100, 2/step
- Dynamic range: 24-72, 2/step
- Speed: 1-6, 6 steps
- Wall filter: 0-6, 7 steps
- Invert: on/off
- Angle: -89°~89°, 1/step
- Quick angle: 0°, -60°, 60°
- Gray map: 8 types
- Tint map: Off; 16 types
- Time/frequency resolution: 0-4, 5 steps
- Auto calc: on/off
- Trace area: above, below, all
- HPRF: on/off
- Duplex/Triplex: on/ off
- Auto calc cycle: 1~5
- Auto calc param

4.8 Smart 3D (option)

- Smart 3D™
  - Angle: 10-80, 2/step
  - Distance: 10mm-200mm, 10mm/step
  - Display formats: Single, Dual, Quad
  - Reset: Reset All, Reset curve, Reset orientation
  - Quick Rotation: 0°, 90°, 180°, 270°
  - Render type: Gray, Invert
  - Accept VOI: on/off
  - Render: Surface, Max, Min, X-ray
  - Direct: D/U, U/D, L/R, R/L, F/B, B/F (D: down, U: up, L: left, R: right, F: front, B: back)
  - Threshold: 0%-100%, 1%/step
  - Opacity: 0%-100%, 5%/step
  - Smooth: 0-20, 21 steps
  - Bright: 0%-100%, 2%/step
  - Contrast: 0%-100%, 2%/step
  - Tint: off; 8 types
  - Current window: VR, A, B, C
  - iClear: Off; On,1-4 steps
- Edit
  - Rotation control: X, Y, Z axis
  - Tool: inside contour, outside contour; inside rect, outside rect
  - Other operations: undo, undo all

4.9 iScape™ View (option)

- Panoramic imaging
- Available on all transducers
- Acquisition method: B mode
- Imaging length: 120cm
- Tint map: off; 16 types
- Rotation: 0°~355°, 5°/step

4.10 Zoom

- iZoom™
  - Full screen zoom
  - Normal image, Zoom standard area, Zoom image area, 3 steps
- Spot zoom (write zoom) 0.8-10x
- Pan zoom (read zoom) 0.8-10x

## 5 Cine Review and Post Processing

5.1 Cine review

- Available in all modes
- Frame by frame manual cineloop review or auto playback with variable speed



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- Independent cine review in 2D Dual and Quad mode one by one
- Maximum cine memory is up to 17265 frames and PW mode up to 169.6s
- Cine length: 1-60s
- Frame compare: compare different frames for one cine in dual format
- Cine compare: compare two or more than two cines in dual or quad format
- Skip to first and skip to last: one keystroke review the first or last frame
- Start point and end point: selectable

5.2 Post Processing

- B-mode:
  Zoom
  Gray map
  Tint map
  Flip
  iClear
  Gray invert
  Auto merge
- M-mode:
  Gray map
  Tint map
- Color/Power:
  Invert
  Baseline
  Map
  Priority
  Smooth
  Dual Live
- PW:
  Gain
  Baseline
  Dynamic Range
  Angle correction
  Quick angle
  Invert
  Gray map
  Tint map
  Auto calc

# 6 Measurement/Analysis and Report*

6.1 Generic measurements

- 2D-mode
  - Depth
  - Distance
  - Angle
  - Area: Ellipse, Trace, Spline, Cross
  - Trace Length
  - Double Distance
  - Parallel
  - Volume: 3-Distance, Ellipse, Ellipse + Distance)
  - Length Ratio
  - Area Ratio
  - IMT
  - B Histogram
  - B Profile
  - Volume Flow
  - Color Velocity
- M-mode
  - Distance
  - Time
  - Slope
  - Heart Rate
  - Velocity
- Doppler mode
  - D Velocity
  - Time
  - Heart Rate
  - Acceleration
  - D Trace
  - PS/ED
  - Volume Flow
- Automatic Doppler Spectrum Analysis
  - Heart cycle pre-settable (1, 2, 3, 4, 5)
  - Automatic tracing in real-time
  - User configurable display of items
  - Support PI, RI, TAMAX, TAMEAN, Volume Flow calculations
  - Appropriate factory setting according to applications

6.2 Clinical option measurement package

- Abdominal
  - Liver
  - Renal Length
  - Renal Height
  - Renal Width
  - Renal Cortical Thickness
  - Adrenal Length
  - Adrenal Height

- Adrenal Width
- Common bile duct
- Portal Vein Diameter
- Common hepatic duct
- Gallbladder Length
- Gallbladder Height
- Gallbladder wall thickness
- Pancreatic duct
- Pancreatic head
- Pancreatic body
- Pancreatic tail
- Spleen
- Aorta Diameter
- Iliac Diameter
- Pre-void Bladder Length
- Pre-void Bladder Height
- Pre-void Bladder Width
- Post-void Bladder Length
- Post-void Bladder Height
- Post-void Bladder Width
- Ureter
- Renal Artery Origin
- Arcuate Artery
- Segmental Artery
- Interlobar Artery
- Renal Artery
- Main Renal Artery
- Renal Vein
- Aorta
- Celiac Axis
- Superior Mesenteric Artery
- Common Hepatic Artery
- Hepatic Artery
- Splenic Artery
- Inferior Vena Cava
- Portal Vein
- Main Portal Vein
- Hepatic Vein
- Left Hepatic Vein
- Right Hepatic Vein
- Middle Hepatic Vein
- Splenic Vein
- Superior Mesenteric Vein
- Renal Volume
- Pre-void Bladder Volume
- Post-void Bladder Volume
- Micturated Volume

• Gynecology
- Uterine Length
- Uterine Height
- Uterine Width
- Uterine Cervix Length
- Uterine Cervix Height
- Uterine Cervix Width
- Endometrium Thickness
- Ovary Length
- Ovary Height
- Ovary Width
- Follicle 1~16 Length
- Follicle 1~16 Width
- Follicle1~16 Height
- Follicle Volume
- Ovary Volume
- UT Volume
- Uterus Body
- UT-L/ CX-L

• Obstetrics
- EGestational Sac Diameter
- Yolk Sac
- Crown Rump Length
- Nuchal Translucency
- Biparietal Diameter
- Occipital Frontal Diameter
- Head Circumference
- Abdominal Circumference
- Femur Length
- Abdominal Transversal Diameter
- Anteroposterior Abdominal Diameter
- Cerebellum Diameter
- Cist Magna
- Lateral Ventricle Width
- Hemisphere Width
- Outer Orbital Diameter
- Inter Orbital Diameter
- Humerus Length
- Ulna Length
- Radius Length
- Tibia Length
- Fibula Length
- Clavicle Length
- Length of Vertebrae
- Middle Phalanx Length


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- Foot Length
- Ear Length
- Anteroposterior trunk diameter
- Transverse trunk diameter
- Fetal Trunk Cross-sectional Area
- Thoracic Diameter
- Heart Circumference
- Thoracic circumference
- Umbilical Vein Diameter
- Fetal kidney Length
- Matrix Kidney Length
- Cervical Length
- Amniotic Fluid
- Nuchal Fold
- Orbit
- Placental Thickness
- Gestational Sac Diameter 1
- Gestational Sac Diameter 2
- Gestational Sac Diameter 3
- Amniotic Fluid 1
- Amniotic Fluid 2
- Amniotic Fluid 3
- Amniotic Fluid 4
- Left Ventricular Internal Diameter at End-diastole
- Left Ventricular Internal Diameter at End-systole
- Left Ventricular Diameter
- Left Atrium Diameter
- Right Ventricular Internal Diameter at End-diastole
- Right Ventricular Internal Diameter at End-systole
- Right Ventricular Diameter
- Right Atrium Diameter
- Interventricular Septal Thickness at End-diastole
- Interventricular Septal Thickness at End-systole
- Interventricular Septal Thickness
- Aorta Diameter
- Main Pulmonary Artery Diameter
- Right Ventricular Outflow Tract Diameter
- Right Ventricular Outflow Tract Diameter
- Left Ventricular Area
- Left Atrium Area
- Right Ventricular Area
- Right Atrium Area
- Heart area
- Facial Angle
- Mitral Valve diameter
- Pulmonary valve Diameter
- Ascending Aorta Diameter
- Descending Aorta Diameter
- Ductus Arteriosus Diameter
- Tricuspid valve Diameter
- Left pulmonary Artery Diameter
- Right pulmonary Artery Diameter
- Inferior vena cava Diameter
- Aorta Valve Diameter
- Mean Gestational Sac Diameter
- AFI
- Estimated Fetal Weight
- Estimated Fetal Weight 2
- HC/AC
- FL/AC
- FL/BPD
- AXT
- CI
- FL/HC
- HC(c)
- HrtC/TC
- TCD/AC
- LVW/HW
- LVD/RVD
- LAD/RAD
- AoD/MPAD
- LAD/AoD
- Fetal Heart Rate
- Left ventricular short-axis diameter at end diastole
- Left ventricular short-axis diameter at end systole
- Right ventricular short-axis diameter at end diastole
- Right ventricular short-axis diameter at end systole
- Interventricular septal thickness at en diastole
- Interventricular septal thickness at en



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systole
- Umbilical Artery
- Ductus Veno
- Placenta Artery
- Middle Cerebral Artery
- Fetal Aorta
- Descending Aorta
- Uterine Artery
- Ovarian Artery
- Fetal Heart Rate

• Cardiology
- Left Atrium Diameter
- Left Atrium major Diameter
- Left Atrium minor Diameter
- Right Atrium major Diameter
- Right Atrium minor Diameter
- Left Ventricular major Diameter
- Left Ventricular minor Diameter
- Right Ventricular major Diameter
- Right Ventricular minor Diameter
- Left Atrium area
- Right Atrium area
- Left Ventricular area at end-diastole
- Left Ventricular area at end-systole
- Right Ventricular area at end-diastole
- Right Ventricular area at end-systole
- Left Ventricular Internal Diameter at end-diastole
- Left Ventricular Internal Diameter at end-systole
- Right Ventricular Diameter at end-diastole
- Right Ventricular Diameter at end-systole
- Left Ventricular Posterior wall thickness at end-diastole
- Left Ventricular Posterior wall thickness at end-systole
- Right Ventricular Anterior wall thickness at end-diastole
- Right Ventricular Anterior wall thickness at end-systole
- Interventricular Septal thickness at end-diastole
- Interventricular Septal thickness at end-systole
- Aorta Diameter
- Aorta arch Diameter
- Ascending Aorta Diameter
- Descending Aorta Diameter
- Aorta Isthmus Diameter
- Aorta ST junct Diameter
- Aorta Sinus Diameter
- Ductus Arteriosus Diameter
- Previous ductal Diameter
- Posterior ductal Diameter
- Aortic Valve Cusp Separation
- Left Ventricular Outflow Tract Diameter
- Aorta Valve Diameter
- Aortic Valve Area
- Pulmonary valve Diameter
- Left pulmonary Artery Diameter
- Right pulmonary Artery Diameter
- Main pulmonary Artery Diameter
- Right Ventricular Outflow Tract Diameter
- Mitral Valve diameter
- Mitral Valve area
- Mitral Valve Cusp Separation
- Distance between point E and Interventricular Septum when mitral valve is fully open
- Tricuspid valve Diameter
- Tricuspid Valve Area
- Inferior vena cava inspiration Diameter
- Inferior vena cava expiration Diameter
- Superior vena cava inspiration Diameter
- Superior vena cava expiration Diameter
- Left Coronary Artery
- Right Coronary Artery
- Ventricular Septal defect Diameter
- Atrial Septal defect Diameter
- Patent ductus Arteriosus Diameter
- Patent Oval Foramen Diameter
- Pericardial Effusion at diastole
- Pericardial Effusion at systole
- Heart Rate
- End-diastolic Left Ventricular


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Measurement
- End-systolic Left Ventricular Measurement
- Left Atrium Diameter/Aorta Diameter
- Aorta Diameter/Left Atrium Diameter
- Left Atrium Diameter
- Left Ventricular Internal Diameter at end-diastole
- Left Ventricular Internal Diameter at end-systole
- Right Ventricular Diameter at end-diastole
- Right Ventricular Diameter at end-systole
- Left Ventricular Posterior wall thickness at end-diastole
- Left Ventricular Posterior wall thickness at end-systole
- Right Ventricular Anterior wall thickness at end-diastole
- Right Ventricular Anterior wall thickness at end-systole
- Interventricular Septal thickness at end-diastole
- Interventricular Septal thickness at end-systole
- Aorta Diameter
- Aorta arch Diameter
- Ascending Aorta Diameter
- Descending Aorta Diameter
- Aorta Isthmus Diameter
- Aorta ST junct Diameter
- Aorta Sinus Diameter
- Left Ventricular outflow tract Diameter
- Aortic valve Cusp Separation
- Left pulmonary Artery Diameter
- Right pulmonary Artery Diameter
- Main pulmonary Artery Diameter
- Right Ventricular outflow tract Diameter
- Amplitude of the Mitral Valve E wave
- Amplitude of the Mitral Valve A wave
- Mitral Valve E-F slope
- Mitral Valve D-E slope
- Amplitude of the Mitral Valve DE wave
- Mitral Valve Cusp Separation
- Distance between point E and the interventricular septum
- Pericardial effusion at diastole
- Pericardial effusion at systole
- Left Ventricular pre-ejection period
- Left Ventricular ejection time
- Right Ventricular pre-ejection period
- Right Ventricular ejection time
- Heart Rate
- End-diastolic Left Ventricular Measurement
- End-systolic Left Ventricular Measurement
- Left Atrium diameter/Aorta diameter
- Aorta Diameter/Left Atrium Diameter
- Mitral Valve Maximum Velocity
- Mitral Valve E-wave Velocity
- Mitral Valve A-wave Velocity
- Mitral Valve E-wave Velocity-Time Integral
- Mitral Valve A-wave Velocity-Time Integral
- Mitral Valve Velocity-Time Integral
- Mitral Valve Acceleration Time
- Mitral Valve Deceleration Time
- Isovelocity Relaxation Time
- Isovelocity Compression Time
- Mitral Valve E-wave Duration
- Mitral Valve A-wave Duration
- Left Ventricular Outflow Tract Velocity
- Left Ventricular Outflow Tract Velocity-Time Integral
- Left Ventricular Outflow Tract Acceleration Time
- Ascending Aorta Maximum Velocity
- Descending Aorta Maximum Velocity
- Aorta Valve Maximum Velocity
- Aorta Valve Velocity-Time Integral
- Left Ventricular Pre-ejection Period
- Left Ventricular Ejection Time
- Aorta Valve Acceleration Time
- Aorta Valve Deceleration Time
- Right Ventricular Ejection Time
- Right Ventricular Pre-ejection Period
- Tricuspid Valve Maximum Velocity
- Tricuspid Valve E-wave Flow Velocity



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- Tricuspid Valve A-wave Flow Velocity
- Tricuspid Valve Velocity-Time Integral
- Tricuspid Valve Acceleration Time
- Tricuspid Valve Deceleration Time
- Tricuspid Valve A-wave Duration
- Right Ventricular Outflow Tract Maximum Velocity
- Right Ventricular Outflow Tract Velocity-Time Integral
- Pulmonary Valve Maximum Velocity
- Pulmonary Valve Velocity-Time Integral
- Pulmonary Valve Acceleration Time
- Main Pulmonary Artery Maximum Velocity
- Right Pulmonary Artery Maximum Velocity
- Left Pulmonary Artery Maximum Velocity
- Pulmonary Vein S-wave Flow Velocity
- Pulmonary Vein D-wave Flow Velocity
- Pulmonary Vein A-wave Flow Velocity
- Pulmonary Vein A-wave Duration
- Pulmonary Vein S-wave Velocity-time Integral
- Pulmonary Vein D-wave Velocity-time Integral
- Pulmonary Vein Deceleration Time
- Inferior Vena Cava Inspiration Maximum Velocity
- Inferior Vena Cava Expiration Maximum Velocity
- Superior Vena Cava Inspiration Maximum Velocity
- Superior Vena Cava Expiration Maximum Velocity
- Mitral Valve Regurgitation Maximum Velocity
- Mitral Valve Regurgitation Velocity-Time Integral
- Mitral Valve Stenosis Maximum Velocity
- Rate of Pressure change
- Aortic Valve Regurgitation Maximum Velocity
- Aortic Valve Regurgitation Velocity-Time Integral
- Aortic Valve Regurgitation Deceleration Time
- Aortic Valve Regurgitation Pressure Half Time
- Aortic Valve Regurgitation Velocity at end-Diastole
- Tricuspid Valve Regurgitation Maximum Velocity
- Tricuspid Valve Regurgitation Velocity-Time Integral
- Pulmonary Valve Regurgitation Maximum Velocity
- Pulmonary Valve Regurgitation Velocity-Time Integral
- Pulmonary Valve Regurgitation Pressure Half Time
- Pulmonary Valve Regurgitation Velocity at end-Diastole
- Ventricular Septal Defect Maximum Velocity
- Atrial Septal Defect Maximum Velocity
- Patent Ductus Arteriosus Velocity at End-diastole
- Patent Ductus Arteriosus Velocity at End-systole
- Coarctation of Pre-Ductus
- Coarctation of Post-Ductus
- Heart Rate
- Right Atrium Pressure
- Mitral Valve E-Vel/A-Vel
- Mitral Valve Orifice Area (PHT)
- Tricuspid Valve E-Vel/A-Vel
- Tricuspid Valve Orifice Area (PHT)

• Urology
- Renal Length
- Renal Height
- Renal Width
- Renal Cortical Thickness
- Adrenal Length
- Adrenal Height
- Adrenal Width
- Prostate Length
- Prostate Height
- Prostate Width
- Seminal Vesicle Length


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- Seminal Vesicle Height
- Seminal Vesicle Width
- Testicular Length
- Testicular Height
- Testicular Width
- Ureter
- Pre-void Bladder Length
- Pre-void Bladder Height
- Pre-void Bladder Width
- Post-void Bladder Length
- Post-void Bladder Height
- Post-void Bladder Width
- Prostate Mass1 Distance 1~3
- Prostate Mass2 Distance 1~3
- Prostate Mass3 Distance 1~3
- Testis Mass1 Distance 1~3
- Testis Mass2 Distance 1~3
- Testis Mass3 Distance 1~3
- Renal Volume
- Prostate Volume
- Testicular Volume
- Pre-void Bladder Volume
- Post-void Bladder Volume
- Micturated Volume

• Vascular
- Common Carotid Artery IMT
- Bulbillate IMT
- Internal Carotid Artery IMT
- External Carotid Artery IMT
- Stenosis Diameter
- Stenosis Area
- Intima-Media Thickness
- Common Carotid Artery
- Bulbillate
- Internal Carotid Artery
- External Carotid Artery
- Vertebral Artery
- Innominate Artery
- Subclavian Artery
- Axillary Artery
- Brachial Artery
- Ulnar Artery
- Radial Artery
- Subclavian Artery
- Axillary Vein
- Cephalic Vein
- Basilic Vein
- Ulnar Vein
- Radial Vein
- Common Iliac Artery
- External Iliac Artery
- Common Femoral Artery
- Superficial Femoral Artery
- Popliteal Artery
- Tibial Peroneal Trunk Artery
- Peroneal Artery
- Posterior Tibial Artery
- Anterior Tibial Artery
- Dorsalis Pedis Artery
- Common Iliac Vein
- External Iliac Vein
- Femoral Vein
- Great Saphenous Vein
- Popliteal Vein
- Tibial Peroneal Trunk Vein
- Sural Vein
- Soleal Vein
- Peroneal Vein
- Posterior Tibial Vein
- Anterior Tibial Vein
- Anterior Cerebral Artery
- Middle Cerebral Artery
- Posterior Cerebral Artery
- Ant.communicating br.
- Post.communicating br.
- Basilar Artery
- Internal Iliac Artery
- Deep Femoral Artery
- Basilar Vein
- Brachial Vein
- Internal Iliac Vein
- Common Femoral Vein
- Superficial Femoral Vein
- Deep Femoral Vein
- Small Saphenous Vein
- Ankle Systolic Pressure
- Brachial Systolic Pressure

• Small Parts
- Thyroid Length
- Thyroid Height
- Thyroid Width
- Isthmus height

- Testicular Length
- Testicular Height
- Testicular Width
- Breast Mass1 d1-d3
- Breast Mass2 d1-d3
- Breast Mass3 d1-d3
- Thyroid Mass1 d1~d3
- Thyroid Mass2 d1~d3
- Thyroid Mass3 d1~d3
- Thyroid Volume
- Superior Thyroid Artery
- Inferior Thyroid Artery

• Orthopedics
- Hip
- d/D

6.3 IMT
- Intima-Media Thickness measurement
- Automatic detection of IMT when ROI is set
- Support CCA, ICA, ECA, Bulb IMT
- Near wall and far wall detection
- Angle selectable

6.4 Report
- Specific report template to the application
- Editable value in report
- Images are selectable
- Titles are pre-settable in setup
- Export as PDF/RTF format

* Not all measurements are listed in this part; For more detailed information please refer to User Manual

# 7 Exam Storage and Management

7.1 Exam storage
- 320GB hard drive. About 270GB internal hard drive reserved for patient data storage
- Capable of storage up to approximately 232,397 single frames (FRM format)
- Storage area
  - Pre-settable: image area, standard area, full-screen
  - Image area: 640*480
  - Standard area: 800*600
  - Full-screen: 1024*768

7.2 Exam management
- iStation™ workstation dedicated for patient exam management
- Patient exam query/retrieve
- Support review of current and past exam
- New exam, Activate exam, Continue exam functions, End exam are available
- Support measurements and calculations on archived exam and images
- Export image as BMP/JPG/TIFF/DCM/FRM format (FRM: system format)
- Export cine as DCM/AVI/CIN format (CIN: system format)
- Support backup/send to USB devices, CD-RW/DVD-RW media

# 8 Connectivity

8.1 Ethernet Network Connection
- Wired connection

8.2 DICOM 3.0
- DICOM Basic (option)
  - Task management
  - Print
  - Storage
  - Storage Commitment
  - Media Exchange
- DICOM Worklist (option)
- DICOM Modality Performed Procedure Step - MPPS (option)
- DICOM OB/GYN structure report (option)
- DICOM Cardiac structure report (option)
- DICOM Vascular structure report (option)
- DICOM Query/Retrieve (option)

8.3 iStorage(included in UltraAssist tool)
- Direct network storage tool between ultrasound system and personal computer

# 9 Probes

9.1 Curve array
- 35C50EA



mindray
healthcare within reach

- Application: Abdomen, Gynecology, Obstetrics, Urology
- Bandwidth: 2.5-5.2 MHz(-6dB); 1.8-6.0 MHz(-20dB)
- Center Frequency: 3.5MHz
- Number of Elements: 80
- FOV (max): 70°
- ExFOV: 85°
- Convex Radius: 50mm
- Footprint: 62.4mm×16.5mm
- B-mode Frequencies: 2.0, 3.5, 4.5, 5.0 MHz
- Harmonic Frequencies: 5.0, 6.0MHz
- Doppler Frequencies: 2.5, 3.0MHz
- Biopsy Guide: available, multi angle, reusable

- 35C20EA
  - Application: Gynecology, Obstetrics, Pediatric, Abdominal, Cardiac
  - Bandwidth: 2.3-4.9 MHz(-6dB); 1.7-6.0 MHz(-20dB)
  - Center Frequency: 3.5MHz
  - Number of Elements: 80
  - FOV (max): 90°
  - ExFOV: 110°
  - Convex Radius: 20mm
  - Footprint: 36.8mm×16.2mm
  - B-mode Frequencies: 2.5, 3.5, 4.5, 5.0MHz
  - Harmonic Frequencies:5.0, 6.0MHz
  - Doppler Frequencies: 2.5, 3.0MHz
  - Biopsy Guide: available, multi angle, reusable
- 65C15EA
  - Application: Pediatric Abdomen, Cardiology
  - Bandwidth: 4.2-9.5 MHz(-6dB); 3.0-11.2 MHz(-20dB)
  - Center Frequency: 6.5MHz
  - Number of Elements: 80
  - FOV (max): 96°
  - ExFOV: 108°
  - Convex Radius: 15mm
  - Footprint: 29.3mm×10.2 mm
  - B-mode Frequencies: 5.0, 6.5, 7.5, 8.5MHz
  - Harmonic Frequencies:8.0, 9.0MHz
  - Doppler Frequencies: 4.4, 5.0MHz
  - Biopsy Guide: available, multi angle, reusable
- 65EC10EA
  - Application: Gynecology, Obstetrics, Urology
  - Bandwidth: 4.9-9.7MHz(-6dB); 3.5-12.2MHz(-20dB)
  - Center Frequency: 6.5MHz
  - Number of Elements: 80
  - FOV (max): 140°
  - ExFOV: 150°
  - Convex Radius: 10mm
  - Footprint: 22.1mm× 9.3 mm
  - B-mode Frequencies: 5.0, 6.5, 7.5, 8.5MHz
  - Harmonic Frequencies:8.0, 9.0MHz
  - Doppler Frequencies: 4.0, 5.0MHz
  - Biopsy Guide: available, reusable
- 65EC10ED
  - Application: Gynecology, Obstetrics, Urology
  - Bandwidth: 4.0-9.5 MHz(-6dB); 3.0-11 .0MHz(-20dB)
  - Center Frequency: 6.5MHz
  - Number of Elements: 80
  - FOV (max): 140°
  - ExFOV: 150°
  - Convex Radius: 10mm
  - Footprint: 22.1mm×9.3mm
  - B-mode Frequencies: 5.0, 6.5, 7.5, 8.5 MHz
  - Harmonic Frequencies: 8.0, 9.0MHz
  - Doppler Frequencies: 4.0, 5.0MHz
  - Biopsy Guide: available, reusable
- 65EB10EA_S / 65EB10EA_T
  - Application: Urology
  - Bandwidth: 4.3-10 MHz(-6dB); 3.0-12.5 MHz(-20dB)
  - Center Frequency: 6.5MHz
  - Number of Elements: 80
  - FOV (max):140°
  - ExFOV:150°
  - Convex Radius: 9mm
  - Footprint: 20.1mm×9.0 mm

- B-mode Frequencies: 5.0, 6.5, 7.5, 8.5MHz
- Harmonic Frequencies: 8.0, 9.0MHz
- Doppler Frequencies: 4.0, 5.0MHz
- Biopsy Guide: available, reusable

9.2 Linear array

- 75L38EA
  - Application: Thyroid, Breast, Small Part, Vascular, MSK, Nerve, Orthopedic
  - Bandwidth: 5.0-11.0 MHz (-6dB); 3.4-12.9 MHz (-20dB)
  - Center Frequency: 7.5MHz
  - Number of Elements: 80
  - Field of View (max): 37mm
  - Steered Angle: +/-6°(B, Color, PW)
  - Footprint: 43.5mm×10.2mm
  - B-mode Frequencies: 5.0, 7.5, 8.5, 10.0 MHz
  - Harmonic Frequencies: 8.0, 10.0MHz
  - Doppler Frequencies: 5.0, 5.7MHz
  - Biopsy Guide: available, multi angle, reusable
- 10L24EA
  - Application: Thyroid, Breast, Small Part, Vascular, MSK, Nerve, Orthopedic
  - Bandwidth: 5.0-11.9 MHz (-6dB); 3.7-16.2 MHz (-20dB)
  - Center Frequency: 10.0MHz
  - Number of Elements: 80
  - Field of View (max): 24mm
  - Steered Angle: +/-6°(B, Color, PW)
  - Footprint: 30.0mm×8.0mm
  - B-mode Frequencies: 8.0, 10.0, 12.0, 14.0MHz
  - Harmonic Frequencies: 10.0, 12.0MHz
  - Doppler Frequencies: 5.7, 6.6MHz
  - Biopsy Guide: available, multi angle, reusable

## 10 Peripheral Devices and Accessories (Option)

10.1 Analog Black/white video printer

- SONY UP-897MD
- MITSUBISHI P93W-Z

10.2 Analog Color video printer

- SONY UP-20
- MITSUBISHI CP910E

10.3 Digital Black and White Video Printer

- SONY D897

10.4 Graph/text printer

- HP LaserJet 1020 plus (not applicable for FDA region)
- HP Deskjet 1050
- HP Deskjet Ink Advantage 2020hc
- HP Deskjet Ink Advantage 2010
- HP Deskjet Ink advantage Printer K109g
- HP Officejet Pro 8100
- HP Deskjet 1000-J110a
- EPSON Stylus PHOTO R230
- EPSON Stylus PHOTO R270

10.5 Footswitch

- USB port: FS-81-SP-2 (1-pedal)
- USB port: 971-SWNOM (2-pedal)
- USB port: 971-SWNOM (3-pedal)
- Support User-definable functions (Freeze, Save, Print)

10.6 Built-in Battery

- Replaceable and rechargeable lithium battery
- Continuous work time: about 1.5h in B mode
- Full battery lasts about 24h in standby mode
- Empty battery recharged to full in less than 3h

10.7 Built-in DVD R/W

- DVD R/W drive

## 11 System Inputs and Outputs

11.1 Video/Audio output

- Video out: 1 port
- Audio out: 2 ports
- S-Video out: 1 port
- VGA out: 1 port

11.2 Other input/output

- USB: 3 ports
- Ethernet: 1 port
- Remote control: 1 port

## 12 Safety and Conformance

12.1 Quality standards

- ISO 9001:2008
- ISO 13485:2003

12.2 Design standards

- EN 60601-1 and IEC 60601-1
- EN 60601-1-2 and IEC 60601-1-2
- EN 60601-2-37 and IEC60601-2-37
- EN ISO 14971 and ISO 14971
- EN ISO10993-1 and ISO10993-1
- EN 62366 and IEC 62366
- EN ISO 17664
- EN 62304 and IEC 62304
- EN 1041
- EN ISO 15223-1

12.3 CE declaration

DC-N2 system is fully in conformance with the Council Directive 93/42/EEC Concerning Medical Devices, as amended by 2007/47/EC.. The number adjacent to the CE marking (0123) is the code of the EU-notified body that certified meeting the requirements of Annex II of the Directive.

NOTICE:

Not all features or specifications described in this document may be available in all probes and/or modes.

Mindray reserves the right to make changes in specifications and features shown herein, or discontinue the product at any time without notice or obligation. Contact Mindray Representative for the most current information

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